

CREATIVITY-CONVERGENCE CAMP FOR ENHANCING CREATIVE PROBLEM SOLVING SKILL

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1. Introduction

- The objectives of the camp are to enhance creative problem solving skill, teamwork skill, and communication skill of students by using TRIZ method.
- The camp was organized by Yeungnam University Hub Center for Engineering Education. The subject of 2012 camp was 'happy smile gate' and 'appropriate technology' for 2013 camp.
- Participating students were from 19 participating universities of Yeungnam University HCEE.

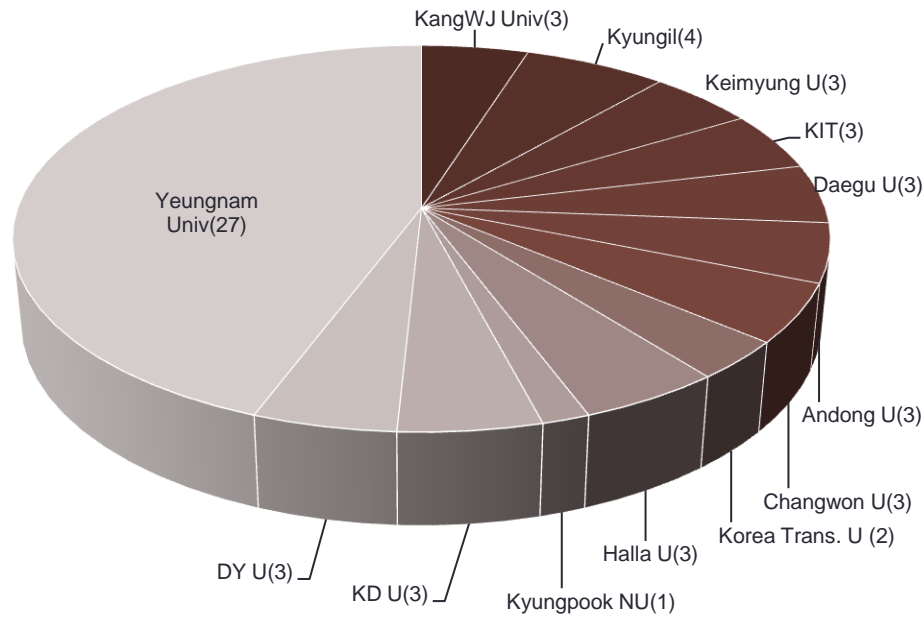
2. Camp planning and operation

- ① Themes of project camp were 'Happy Smile Gate' in 2012 and 'Appropriate Technology' in 2013.
- ② Each participating university sent 3 students (2 engineering, 1 non-engineering discipline, may include one woman engineer)
- ③ Select comfortable camp venue
- ④ Invite two lecturers for creative problem solving skills and TRIZ
- ⑤ Prepare all necessary documents and forms for team formation, meeting procedure, evaluation sheet, excel scoring form, etc.
- ⑥ Select review teams
- ⑦ Mid camp presentations by each team on the second day
- ⑧ On the third day final presentations using power point slides and UCC . And final demonstration of final products

3. Detail time schedule of the camp

	9.20(Thu)	9.21(Fri)	9.22(Sat)
09:00~11:00		Do the design project (visual communication through sketch, idea generation)	Product exhibition and presentation
11:00~12:00	- registration - Room allocation & team formation		Review and awarding
12:00~13:00	lunch	lunch	Lunch and closing remarks
13:00~14:00	Lecture1: creative introductory engineering design (Myongji University, Prof. Park)	Preparing Review Session and mid presentation (using only flip chart, 5 min presentations)	
14:00~15:00	Theme analysis and Brainstorming)		
15:00~15:10	Break time	Break time	
15:10~17:00	Lecture 2 Intensive Triz lecture I . (Korea I. T. University, Prof. Lee)	Making the Products	
17:00~17:10	Break time		
17:10~19:00	Lecture 2 Intensive Triz lecture I . (Korea I. T. University, Prof. Lee)		
19:00~20:00	Dinner	[18:30~19:30] dinner	
20:00~20:30	Do the design project – team activity (ice breaking, team name, team leader, team slogan)	[19:30~22:00] Making the products and preparing final presentation	
20:30~22:00	Do the design project – team activity Theme analysis, brainstorming, idea generation		

Participating Universities and number of students



Participating students majors

Engineering students

Mechanical 10

Electric and electronic 8

Architecture and civil 5

Chemical 5

Computer, ICT 4

Material 3

Urban 3

Environmental 2

Embedded system, industrial

Regerative energy,... 1

Non-engineering

Sciences, management, political

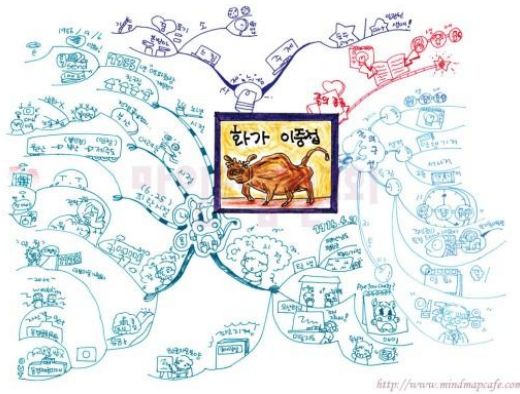
Science, design 2

Fashion, food, history, education..

1

Creative idea generation methods by Prof. Park

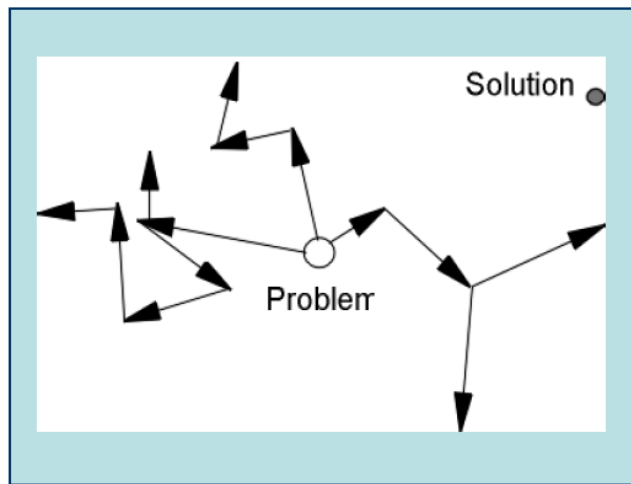
- Divergent thinking: brainstorming, brainwriting, synetics, SCAMPER, morphology, random input technology, biomimetics



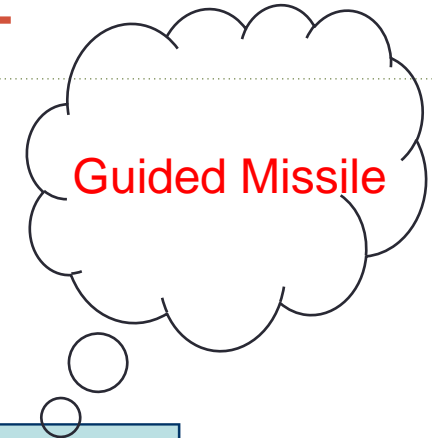
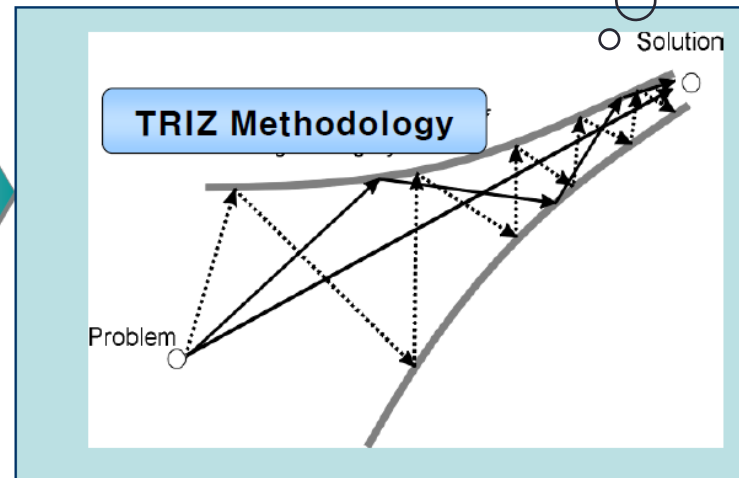
해결안		1	2	3	4	5	6
부분기능							
1	작동 소리				수동 (전으로) → 방열 후		
2	신호 전달				가동 전으로 신호 수기 등록 방법		
3	커피잔의 형태					→ 컵을 크게 하면 커피를 많이 넣을 수 있음	
4	바퀴 (전) 모양					→ 사각형 차로 가동	
5	가죽 물결 부형 형태					→ 가죽 물결 부형 가동	
6	모티아 내장 연재하는 재료	Fe (철, 전)	Wood (나무, 전)	Plastic (플라스틱, 전)			

Comparison of brainstorming and TRIZ

Trials & Errors Brainstorming



TRIZ



(based on patents, regularity)

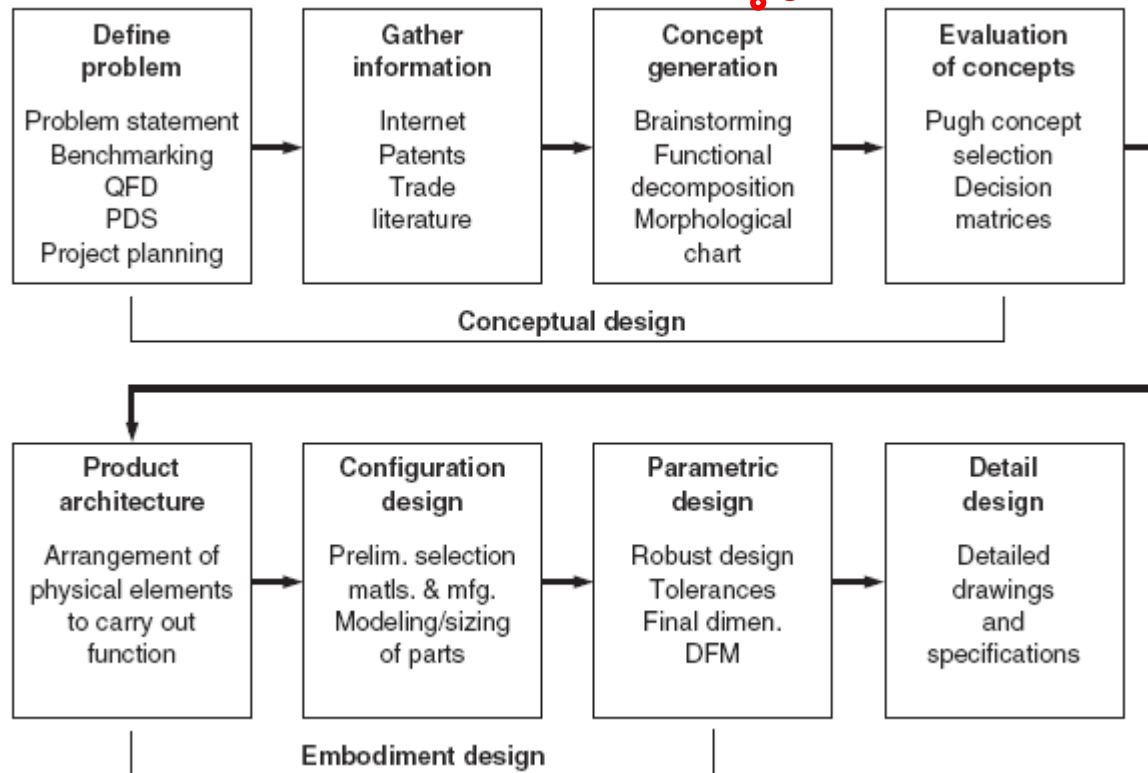
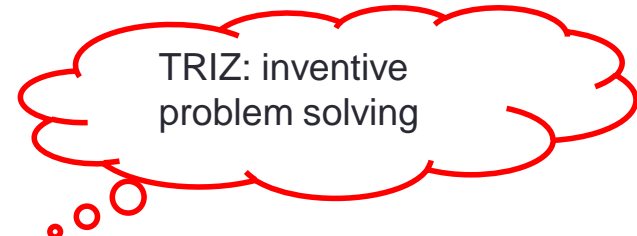
➔ How creates new and smart concepts?

TRIZ: Quick TRIZ methods by Prof. Lee

- ① Describe the problem
- ② Analysis of causes of the problem (1st alternatives generation)
- ③ Analysis of conflicts or contradictions
- ④ Solution finding (solve contradiction, 2nd alternatives generation)
- ⑤ Idea evaluation and perform

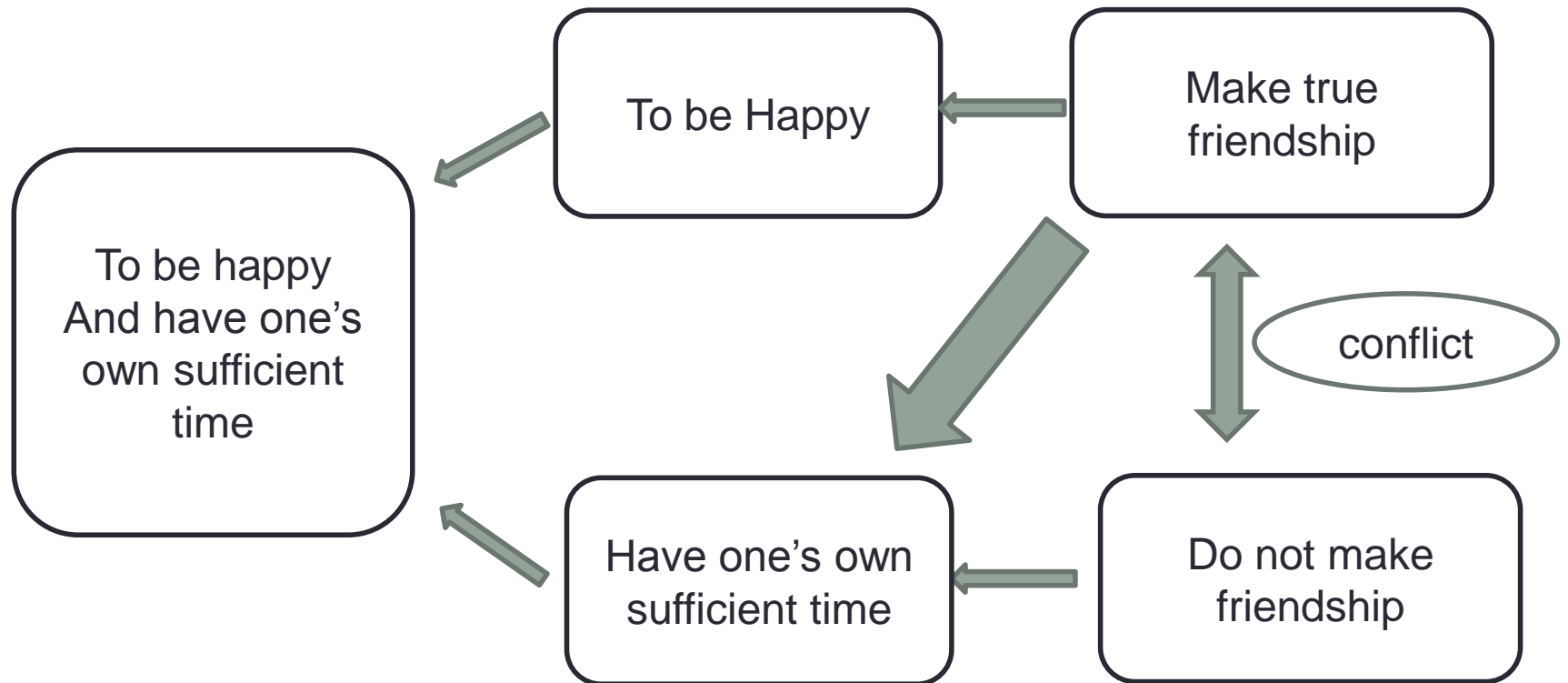
Engineering design methodology vs TRIZ

Contradiction
 Regularity
 Ideal Final Results
 System thinking
 Technological Evolution



Final Presentation and Contests

Team 1: Palette Conflict analysis Diagram



1조: 파레트

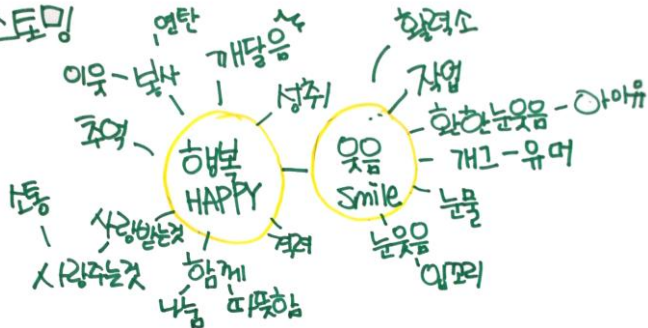
1. Imagine happy smile gate

1. 행복한 문으로 상상하라. ☁

→ 근난을 이겨내는 문, 자선을 뒤돌아볼 수 있는 문
개달음을 주는 문, 누군가와 함께 하는 문 ... 등

2. Brainstorming

2. 브레인스토밍



3. TRIZ

3. 트리즈

Q. 왜 행복하지 않을까? → (이상향) 행복해진다 ♡♡

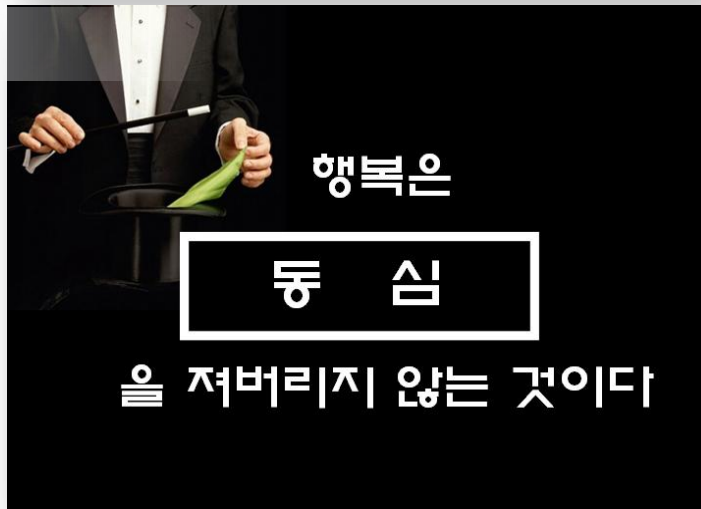
- 혼자라서 ...
- 남과 비교해서 ...
- 여유가 없다 LTE WARP ≡
- 진정한 인간관계 X

We Are in 경쟁사회

2조: WRAP



3조: Rainbow team



Animation

6team: MCNEEM



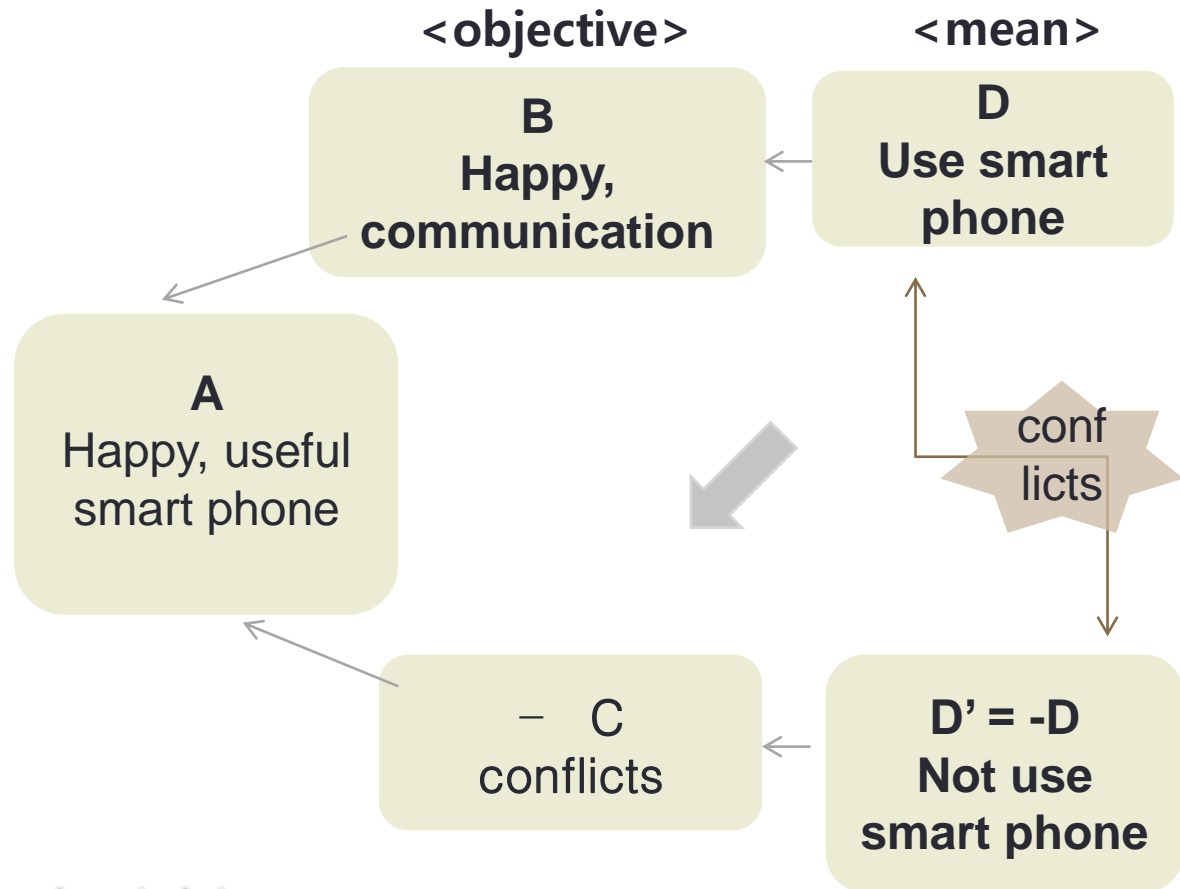
M echanical
C hemical
N ew & renewable
E nvironmental
E lectronic
M anagement



7team: Tips (animation)



Steam: 8th division → TRIZ application



► themes food, smartphone, money, love, isolation

TRIZ principles: physical contradiction

Time separation



C MODE

(Couple Mode)

- Only receiving call.
- No game.
- Unlock MODE by discussion

Space separation



F MODE

(Family Mode)

- Phone, message use
- Limit number of games.

Condition separation



D MODE

(Driving Mode)

- Automatic response
- No use of message, app.
- Navigation function only

9team: DDO,NA (me)



content

1 컨셉 도출

- Brain Storming
- triz

2 Main idea

- 설명
- 디자인

3 기대효과

- 기대사이클
- 실행영상

물리적 모순

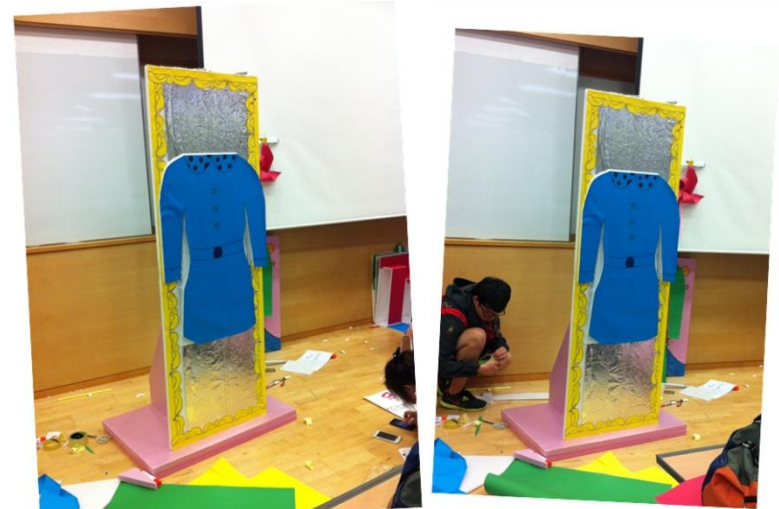
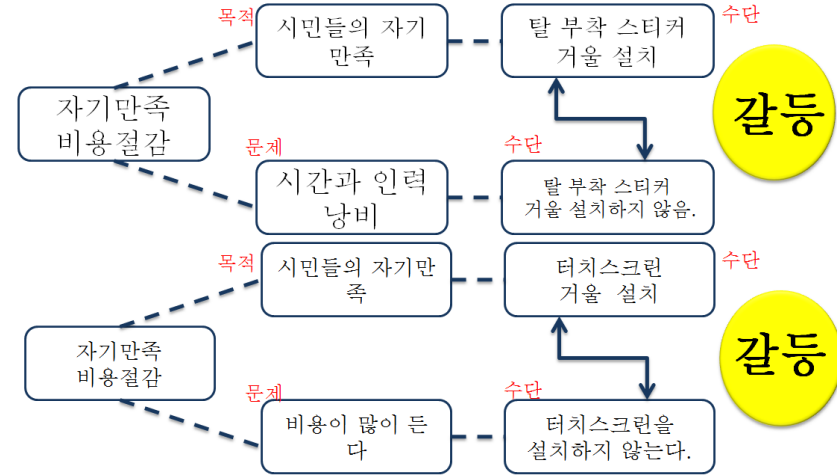
Physical contradiction

조건에 의한 분리 → 통계적으로 기분상태의 영향을 많이 받는 날 (비 오는 날, 월요일 등) 가용시간 확대

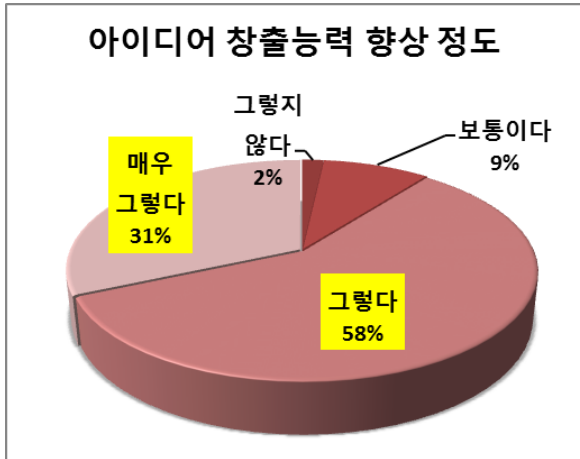
기술적 모순

Technical contradiction

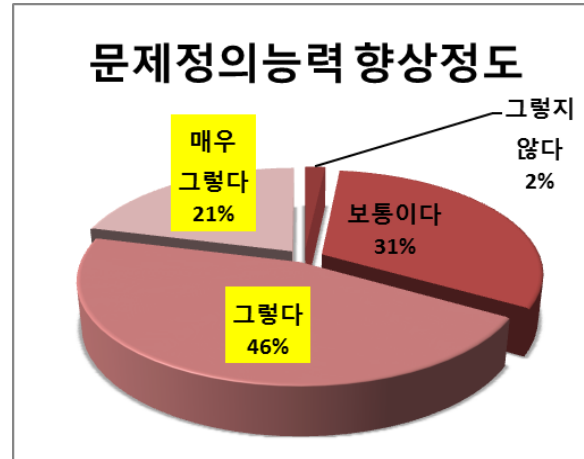
역발상_ 자기 만족으로 일률증가 → 이윤추구



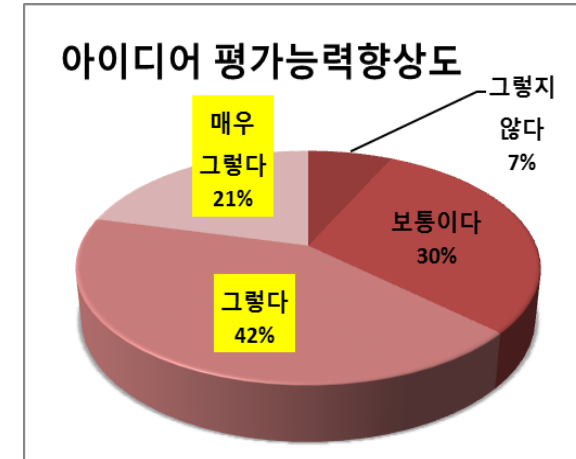
Effects of the TRIZ camp on students outcomes



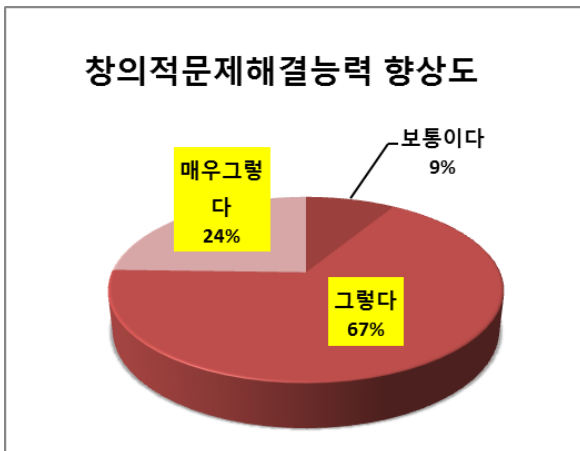
Idea generation capability



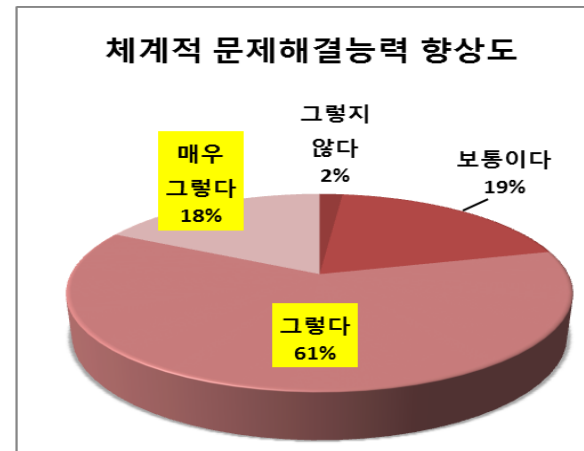
Defining Problem capability



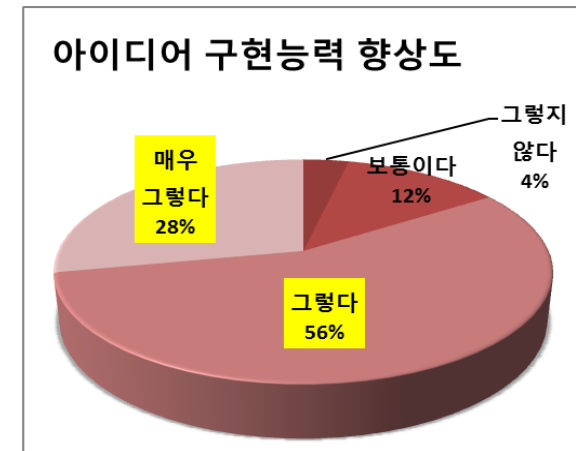
Idea evaluation capability



Creative Problem solving capability



Systematic problem solving capability



Idea implementing capability